

## FY 1974 RDT&E DESCRIPTIVE SUMMARY

Program Element # 35158F

Title: Satellite Data System

Category Intelligence & Communications

Budget Activity #4 - Military Astronautics and Related Equipment

BACKGROUND AND DESCRIPTION: The Satellite Data System (SDS) was originally planned for synchronous equatorial orbit using a multi-purpose satellite system concept. Since the synchronous equatorial orbit cannot provide communications coverage over the polar regions above 75 degrees North Latitude, a highly elliptical polar orbit was selected to provide

The SDS will complement the synchronous equatorial Fleet Satellite Communications (FLTSATCOM) system and is designed to support the Ultra High Frequency (UHF) two-way polar communications requirements for command and control of the Strategic Air Command Single Integrated Operational Plan (SIOP) forces. The SDS will also support the Air Force Satellite Control Facility (AFSCF) requirement for reliable S-Band communications from the AFSCF remote tracking station at Thule, Greenland to CONUS ground stations. The direct benefits derived from the SDS communications capability will be the two-way, real-time command and control of the SIOP forces over the polar regions which will reduce the requirement for maintaining expensive overseas ground station facilities and enhance communications security.

RELATED ACTIVITIES: The Space segment of the FLTSATCOM will be developed, procured and launched under FLTSATCOM Program Element (PE) 33109N. FLTSATCOM will operate at UHF frequencies in synchronous equatorial orbit and will complete the portion of UHF global communications coverage not provided by the Satellite Data System polar orbit. The Air Force UHF aircraft and ground terminals required for operation with the FLTSATCOM and SDS satellites will be procured within the Air Force Satellite Communications System (AFSATCOM), PE 33601F.

WORK PERFORMED BY: Headquarters, Air Force Systems Command, Space and Missile Systems Organization (SAMSO), Los Angeles, California, is responsible for the Satellite Data System. The primary contractor is Hughes Aircraft Company, El Segundo, California.

### PROGRAM ACCOMPLISHMENTS AND FUTURE PROGRAMS:

1. FY 1972 and Prior Accomplishments: The technology phase, completed during FY 1971, confirmed the technical feasibility of the design with the initial specifications being met or exceeded. The SDS multi-purpose configuration was established and the contract definition phase was completed during FY 1972. Evaluation of the contractor system acquisition proposals was accomplished and the contract award was made during June 1972.

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2. FY 1973 Program: A detailed subsystem and spacecraft design and engineering effort was immediately started in support of a communications and spacecraft system Preliminary Design Review (PDR). Preliminary component fabrication and initial assembly and testing of the engineering model components will also be started during FY 1973.

3. FY 1974 Planned Program: The FY 1974 effort will include continuation of the detailed system engineering and design work, development and fabrication of spacecraft and subsystems and Aerospace Ground Equipment hardware, subsystem qualification testing, launch vehicle integration and development of software. These efforts will be in support of a communications and spacecraft systems Critical Design Review (CDR).

4. Program to Completion: The program schedule will support a system Full Operational Capability by  
The total estimated cost has been reduced from that indicated in the FY 1973 Descriptive  
Summary as a result of converting from a cost  
model estimate to cost estimates after contractor award.

5. Milestones:

- a. Spacecraft and Systems PDR
- b. Spacecraft and Systems CDR
- c. First Article Config. Insp.
- d. Launch First Spacecraft
- e. Launch Second Spacecraft
- f. Full Operational Capability

Date

Apr 1973  
May 1974

Estimated Cumulative RDT&E  
Cost to Reach Milestones  
(\$ In Millions)

49.6  
92.7

Budget Activity #1 - Military Astronautics and Related Equipment

Program Element # 35158F

Title Satellite Data System

RESOURCES: (\$ in Millions)

	<u>FY 1972 and Prior</u>	<u>FY 1973</u>	<u>FY 1974</u>	<u>Additional to Completion</u>	<u>Total Estimated Cost</u>
RDTE: Funds	31.7	23.0	40.0		
*Quantities					
Flight Model Spacecraft					1
T-IIIB/Agna Launch Vehicle					1
*These quantities will be procured over the lifetime of the program.					
Procurement:					
Funds	0	0	30.1		
Quantities					
Flight Model Spacecraft			1	2**	
T-IIIB/Agna Launch Vehicles			1	2	

\*\*The Qualification Spacecraft will be refurbished and used as the last flight model spacecraft for a total of four flight spacecraft.